Proposed Web Service Initiatives for the eLearning Industry

Proposed Initiatives

The following Web Service initiatives are proposed:

1. Course catalog exchange for both online training and instructor lead training.
2. Course Registration request and confirmation.
3. Course completion status and results
4. Funds availability verification
5. Financial data exchange
6. Data warehousing support

Course catalog exchange for both online training and instructor lead training

Description:

This service would allow one system to request course catalog information from another system. The service would support both online courseware and instructor lead training courses. Data supplied would include course title, description, costs, prerequisites, scheduled times, and locations.

The LMS obtains catalog information from the Training Service Provider (TSP) system as follows:

1) The LMS posts a PrepGetCatalog request to the TSP system. The request includes authentication information for the system a transaction ID, the maximum wait period, and the maximum number of bytes that should be sent in a single request. The LMS logs the request.
2) The TSP system verifies the authentication information provided by the LMS. The TSP also verifies the LMS is requesting within the time window agreed upon for the exchange of catalog data. The TSP system then responds back with success or failure. The TSP system provides a wait period before the LMS should make the GetCatalog request, the maximum wait period, and the maximum number of bytes that will be sent. The maximum wait period is determined by taking the greater of the waiting period of the LMS and TSP system. The maximum number of bytes is determined by taking the lesser of the value provided by the LMS and the value configured on the TSP system. If failure is returned, a reason is provided. The TSP system logs the request from the LMS and the result.
3) The LMS logs the response from the TSP system. If the response from the TSP system was success, the exchange continues.

4) After the wait time provided by the TSP system expires, the LMS makes a GetCatalog request to the TSP system. The GetCatalog request includes the transaction id and a record set id.
5) Upon receipt of the GetCatalog request, the TSP system responds back with the number of records being provided, the transaction id, the record set id, and the records in the format defined in this document.
6) The LMS receives the response back from the TSP system. After processing the records, the LMS makes a GetCatalogNext request. The GetCatalogNext indicates the successful receipt of the previous record set. If the previous set of records was not successful, a GetCatalogResend message is sent with the appropriate transaction id and record set id.

Justification:

A course catalog web service would allow a greater number of training interventions to be provided to organizations. Public and private universities could also publish their catalog and allow their courses to serve as intervention to organizations.

Course Registration request and status

Description:

This service would allow an LMS to request registration from a training service provider, check the status of the request, and then allow then process the request as if it was managed internally by the learning management system.

The LMS makes registration requests from the TSP system as follows:
1) The LMS stores registration requests during an operational period.
2) An a scheduled basis, the LMS begins the registration request process by posting a PrepPutRegistrations request to the TSP system. The request includes authentication information for the system a transaction ID, the maximum wait period, and the maximum number of bytes that should be sent in a single request. The LMS logs the request.
3) The TSP system verifies the authentication information provided by the LMS. The TSP also verifies the LMS is requesting within the time window agreed upon for the data exchange. The TSP system then responds back with success or failure. The TSP system provides a wait period before the LMS should make the PutRegistrations request, the maximum wait period, and the maximum number of bytes that will be sent. The maximum wait period is determined by taking the greater of the waiting period of the LMS and TSP system. The maximum number of bytes is determined by taking the lesser of the value provided by the LMS and the value configured on the TSP system. If failure is returned, a reason is provided. The TSP system logs the request from the LMS and the result.
4) The LMS logs the response from the TSP system. If the response from the TSP system was success, the exchange continues.
5) After the wait time provided by the TSP system expires, the LMS makes a PutRegistrations request to the TSP system. The PutRegistrations request includes

the transaction id, a record set id, the number of registration request records being submitted, and the data.

6) Upon successful processing of data by the TSP system, the TSP system responds back to the LMS with a PutRegistrationsAck. The PutRegistrationsAck includes the transaction id, and the record id.
7) If the TSP fails to process the data successfully or the wait time expires for LMS session, the TSP system sends a PutRegistrationsResend to the LMS. The LMS then resends the previous record set.
8) After receipt of a PutRegistrationsAck, the LMS then sends the next set of records using the PutRegistrationsNext request.
9) At the end of the transaction, the LMS sends a ClosePutRegistrations request to close the connection and to initiate clean up processes.

A similar process would be employed to check the status of a registration request.

Justification:

This service would reduce costs associated with handling of documents and errors associated with document handling. It also reduces the lag time between requesting a registration and confirming the registration resulting in fewer empty seats at training events.

Course completion status and results

Description:

Course Completion web service would allow the Learning Management System to obtain training completion status from a target Training Service Provider System (TSPS)

Justification:

This service would reduce costs associated with handling of documents and errors associated with document handling. It would also reduces human resource associated costs by automating the verification of completion of training activities.

Funds availability verification

Description:

A Funds availability verification web services would allow an LMS to obtain verification from a financial system that funds are available for a given training request. Data passed to the financial system would include the amount and the accounting code.

Justification:

This service would reduce costs associated with handling of documents and errors associated with document handling. It also reduces human resource costs associated with manual verification of funds.

Financial data exchange

Description:

This service would allow a learning management system to exchange financial information and approval status with a financial system. Data exchanged between the system would include costs information and requisition approval status. This service would also include the aforementioned Funds Availability Verification web service.

Justification:

This service would allow for collection of actual financial data to support training budgeting activities and financial reporting.

Data warehousing support

Description:

A series of web services should be defined that allows data to be extracted from a variety of data sources. Data sources would include training systems, HR systems, financial systems and performance monitoring systems.

Justification:

Data warehouses allow an organization to obtain a true picture of the operation of their organization. It is only through a data warehouse consisting of information from training, HR, finance, and performance monitoring systems that Kirkpatrick level four evaluations can be objectively and methodically. For example, a training event should have an impact on performance results. Data mining activities in the data warehouse should identify a change in performance. Repetition of the training event with a different group should yield similar results and scientifically prove the association between the event and performance. Data mining activities would also identify correlations between training activities and things such as promotion in the organization and job performance.

Competency Management Data Exchange

Description:

Web services defining the interaction between learning management systems and competency management systems would allow organizations to have both an organizational view and an individual view of competencies. Competencies can be viewed at two levels, organizational and individual. Competency systems that are HR focused tend to concentrate on numbers of individuals with given competencies and how to recruit to fulfill those competencies. Learning management systems focus on providing training interventions to bridge the competency gap of an individual. A web service supporting the communication of the two systems would allow an organization to leverage the advantages of each view of competencies.

Justification:

A web service between learning management systems and competency management systems would allow organizations to benefit from an organizational view of competencies and at the same time support the individual needs for development to close competencies. The service would reduce the costs associated with integrating two systems that store similar information. Data integrity issues between the two systems would be reduced by timely updates of competency model information.

Related Initiatives

HR-XML

There is an initiative started a couple years ago to define a web service to support the exchange of human resource information. OPM participated in this initiative in 2006. The HR-XML organization has defined a standard and a certification process. For further information please see: http://www.hr-xml.org